Commonwealth of Pennsylvania

DEPARTMENT OF AGRICULTURE

BUREAU OF CHEMISTRY

BULLETIN NO. 304

SEED REPORT

1917

JAMES W. KELLOGG,
Chief Chemist

Published by Direction of the Secretary of Agriculture,
CHARLES E. PATTON

HARRISBURG, PA.:
J. L. L. KUHN, PRINTER TO THE COMMONWEALTH
1918

CONTENTS

	Page.
Letter of Transmittal,	5
Introduction,	7
Standards of Purity,	8
Special Samples Tested for Purity,	8
Results of Tests for Purity on Special Samples, Table I.	10
Average Purity of Official Samples, Table II.	14
Results of Inspection,	14
Results of Tests for Purity on Official Samples, Tables III,	17

LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE

BUREAU OF CHEMISTRY

Hon. Charles E. Patton,
Secretary of Agriculture,
Harrisburg, Pa.

Harrisburg, Pa., January 7, 1918.

Dear Sir:

I have the honor to transmit herewith for your approval a report showing the results of the work accomplished during 1917, in testing the purity of Seeds, as provided by the Law regulating the sale of Agricultural Seeds.

It is recommended that this report be published in bulletin form for distribution.

Very respectfully,

JAMES W. KELLOGG,
Chief Chemist.

BULLETIN NO. 304

SEED REPORT

1917

INTRODUCTION

The work of the Bureau accomplished during 1917 under the provisions of the Seed Law consisted in the testing of purity by Howard E. Gensler, assisted by Ruth I. Mentzer, of 497 samples of agricultural seeds. Of this number, 276 were official samples secured from seedsmen and dealers throughout the State. The remaining 221 samples were specials submitted by local growers, dealers and consumers, which were tested for purity for a fee of 25 cents each, as provided for by the Law. In making an examination of these samples, determinations were made for the percentages of "Pure Seed," "Foreign Seed," and "Inert Matter" and for the presence of dodder and Canada thistle, in order to note whether or not the seeds being sold, or to be placed on sale, would meet the required standards of purity.

The results of the year's work show that the seeds being sold in Pennsylvania, as a rule, exceed the standards required. Of the official samples examined, less than 8 per cent. fell below these standards. Of the special samples, 17 per cent. tested less than required, being greater in proportion to the deficient official samples as would be expected, because many of them represented stock previous to being cleaned. The averages of the official samples exceeded the required standards by aproximately 2 per cent., except in three cases where only one or two kinds of seed were averaged. As will be noted, several guarantees were given in excess of the required standards and most of these samples, upon being tested, met these guarantees. The results of the analytical work have been tabulated and included in the following pages. Table I shows the purity tests of the special samples, Table II, the average percentages of each kind of the official samples and the results of the tests for purity on the official samples will be found in Table III.

STANDARDS OF PURITY

The seed law establishes standards of purity for twenty kinds of seeds and before being offered for sale they should meet these standards. They range from 75% to 97% and are included herewith as follows:—

Medium Red Clover,	Trifolium pratense,	97 %.
Mammoth Red Clover,	Trifolium pratense,	97 %.
Crimson Clover,	Trifolium incarnatum,	97 %.
Alfalfa,	Medicago sativa,	97 %.
Timothy-Grass,	Phleum pratense,	97 %.
Barley,	Hordeum vulgare,	97 %.
Spelt,	Triticum aestivum Spelta,	97 %.
Wheat,	Triticum aestivum,	97 %.
Buckwheat,	Fagopyrum Fagopyrum,	97 %.
Oats,	Avena sativa,	97 %.
Rye,	Secale cereale,	97 %.
Alsike Clover,	Trifolium hybridum,	95 %.
Perennial Rye-Grass,	Lolium perenne,	95 %.
German Millet,	Chaetochloa italica,	95 %.
Hungarian Millet,	Chaetochloa italica,	95 %.
White Clover,	Trifolium repens,	90 %.
Redtop Grass, (solid or hulled).	Agrostis alba,	85 %.
Canadian Blue-Grass,	Poa Compressa,	75 %.
Orchard Grass,	Dactylis glomerata,	75 %.
Kentucky Blue-Grass,	Poa pratensis,	75 %.
Redtop (unhulled),	Agrostis alba,	75 %.

Dodder and Canada thistle are prohibited from being present in excess of 1 seed in 3,000.

SPECIAL SAMPLES TESTED FOR PURITY

By a provision of the seed law, the Department is permitted to test seeds for purity, for residents of Pennsylvania, for a fee of 25 cents for each sample. Parties selling or purchasing seeds, therefore, may, by taking advantage of this provision, determine the character of the seeds purchased or offered for sale and whether or not they should be recleaned in order to meet the required standards.

When samples are submitted for examination care should be taken that they fairly represent the lot or shipment from which they are taken otherwise the results of purity tests will be of little or no value. Only those seeds which are named in the law and included in the foregoing list, showing the standards of purity, will be tested. When sending special samples of seeds to the Department, therefore, the following directions should be carefully noted:

Amount of Sample:—A three or four ounce sample of the seed, carefully secured and representative of the whole lot or shipment, should be placed in suitable containers, preferably envelopes, which can be tightly closed and sealed.

Charge for Purity Test:—The fee charged for testing is 25 cents and should be submitted with the sample in the form of a check, money order or cash. Stamps will not be accepted. Where only one or two samples are to be submitted, it is preferable to send the fee in cash, which may be inserted in the sample of seed with safety, if the envelopes are carefully sealed.

Address:—Bureau of Chemistry, Pennsylvania Department of Agriculture, Box R, Harrisburg, Pa. The name of the seed and address of the sender should be placed on the package or envelope in order to identify the sample. In order to avoid errors, especially where several samples are to be tested, a letter should be sent advising of the sending of the samples and making request for the work to be done.

Table I, which follows, shows the results of purity tests on each of the 221 special samples of seed received from Pennsylvania seedsmen, dealers and consumers during the year. There were thirteen kinds of seeds represented more than one-half of this number being red clover. Eight kinds of seeds were represented by only one sample which showed purity tests in excess of the standards for these seeds. The average purity for those kinds, where several samples were received, also exceeded the standards, although thirty-five of the red clovers and four of the timothy grasses were deficient. The kind, number and average purity of the special samples, where more than one was tested, are as follows: Red clover 144, average purity, 97.70 per cent.; alfalfa, 11, average 99.73 per cent.; timothy grass, 46, average, 98.88 per cent.; alsike clover, 5, average, 98.64 per cent.; white clover, 7, average, 95.02 per cent. The single samples received tested as follows: Oats, 99.94 per cent.; perennial rye grass, 99.70 per cent.; red top grass, 93.78 per cent.; Canadian blue grass, 82.61 per cent.; orchard grass, 81.51 per cent.; Kentucky blue grass, 80.10 per cent.; sweet clover, 83.05 per cent., and vetch, 99.95 per cent.

TABLE I.—RESULTS OF TESTS ON SPECIAL SAMPLES.

Analyst's number.	Name of Seed.	Pure seed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
		Per ct.	Per ct.	Per ct.	Approx.	Approx.
B 785	Red clover,	97.30	2.05	0.65		
B 786	Red clover,	99.48	0.44	0.08		
B 787	Red clover,	99.86	0.09	0.05		
B 788	Red clover,	99.84	0.03	0.13		
B 789	Red clover,	99.34	0.28	0.38		
B 790	Red clover,	99.39	0.41	0.20		
B 791	Red clover,	99.07	0.69	0.24		
B 792	Red clover,	99.50	0.10	0.10		
B 793	Red clover,	97.49	1.84	0.76		
B 794	Red clover,	99.32	0.59	0.09		
B 795	Red clover,	98.73	0.59	0.68		
B 796	Red clover,	99.81	0.11	0.08		
B 798	Red clover,	99.83	0.13	0.04		
B 799	Red clover,	99.79	0.04	0.17		
B 801	Red clover,	99.56	0.16	0.28		
B 802	Red clover,	99.66	0.19	0.15		
B 804	Red clover,	99.83	0.04	0.13		
B 805	Red clover,	99.70	0.07	0.23		
B 806	Red clover,	91.49	6.41	2.19		
B 807	Red clover,	98.63	1.23	0.14		
B 808	Red clover,	99.49	0.41	0.10		
B 809	Red clover,	93.87	4.24	1.89		
B 811	Red clover,	98.64	0.89	0.47		
B 812	Red clover,	99.81	0.14	0.05		
B 813	Red clover,	98.82	0.18	1.00		
B 814	Red clover,	99.23	0.60	0.17		
B 815	Red clover,	98.11	1.47	0.42		
B 816	Red clover,	99.20	0.71	0.09		
B 817	Red clover,	96.13	2.82	1.05		
B 818	Red clover,	93.55	2.86	3.59		
B 819	Red clover,	98.74	0.70	0.56		
B 820	Red clover,	99.68	0.17	0.15		
B 821	Red clover,	99.57	0.00	0.43		
B 822	Red clover,	97.00	1.09	1.91		
B 823	Red clover,	99.15	0.73	0.12		
B 825	Red clover,	99.85	0.10	0.05		
B 826	Red clover,	99.87	0.11	0.02		
B 827	Red clover,	99.29	0.33	0.38		
B 828	Red clover,	99.68	0.29	0.03		
B 831	Red clover,	98.60	1.02	0.38		
B 832	Red clover,	99.18	0.79	0.03		
B 833	Red clover,	92.32	3.71	3.97		
B 834	Red clover,	99.36	0.43	0.21		
B 838	Red clover,	99.80	0.19	0.01		
B 842	Red clover,	95.78	3.94	0.28		
B 843	Red clover,	95.48	4.20	0.32		
B 844	Red clover,	97.74	1.39	0.87		
B 845	Red clover,	99.66	0.13	0.21		
B 846	Red clover,	98.66	0.48	0.86		
B 847	Red clover,	98.28	0.75	0.97		
B 848	Red clover,	98.12	0.18	1.70		
B 849	Red clover,	92.23	6.06	1.71		
B 852	Red clover,	99.56	0.31	0.33		
B 853	Red clover,	99.82	0.03	0.15		
B 854	Red clover,	99.39	0.56	0.05		
B 856	Red clover,	96.65	2.23	1.12		
B 857	Red clover,	99.87	0.05	0.08		
B 858	Red clover,	99.12	0.48	0.40		
B 859	Red clover,	99.59	0.23	0.18		
B 860	Red clover,	98.59	1.37	0.04		
B 861	Red clover,	94.01	3.55	2.44		
B 862	Red clover,	98.40	0.28	1.32		
B 863	Red clover,	97.99	0.88	1.13		
B 865	Red clover,	99.21	0.29	0.50		
B 866	Red clover,	99.92	0.05	0.03		
B 869	Red clover,	99.79	0.10	0.11		
B 870	Red clover,	99.05	0.85	0.10		
B 877	Red clover,	99.90	0.02	0.08		
B 878	Red clover,	99.79	0.08	0.13		
B 879	Red clover,	94.96	3.74	1.30		

TABLE I.—RESULTS OF TESTS ON SPECIAL SAMPLES—Continued.

Analyst's number.	Name of Seed.	Pure seed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
		Per ct.	Per ct.	Per ct.	Approx.	Approx.
B 880	Red clover,	94.93	4.36	0.71		
B 881	Red clover,	96.78	1.62	1.60		
B 882	Red clover,	94.36	4.97	0.67		
B 883	Red clover,	95.80	2.68	1.52		
B 884	Red clover,	98.50	1.05	0.45		
B 885	Red clover,	99.85	0.00	0.15		
B 886	Red clover,	99.16	0.67	0.17		
B 887	Red clover,	99.61	0.22	0.17		
B 888	Red clover,	94.69	3.40	1.91		
B 889	Red clover,	98.87	1.03	0.10		
B 890	Red clover,	98.82	1.00	0.18		
B 891	Red clover,	99.68	0.32	0.00		
B 892	Red clover,	96.95	2.64	0.41		
B 893	Red clover,	98.60	0.51	0.89		
B 894	Red clover,	94.73	2.46	2.81		
B 895	Red clover,	99.37	0.55	0.08		
B 897	Red clover,	92.33	5.02	2.65		
B 898	Red clover,	94.00	4.51	1.49		
B 899	Red clover,	99.95	0.05	0.00		
B 900	Red clover,	94.71	4.57	0.72		
B 901	Red clover,	98.07	1.35	0.58		
B 902	Red clover,	97.16	1.84	1.00		
B 903	Red clover,	98.73	0.10	1.17		
B 904	Red clover,	99.35	0.40	0.25		
B 905	Red clover,	98.79	0.59	0.62		
B 906	Red clover,	99.43	0.46	0.11		
B 908	Red clover,	99.72	0.08	0.20		
B 909	Red clover,	96.22	2.22	1.56		
B 910	Red clover,	96.57	1.76	1.67		
B 911	Red clover,	96.31	2.18	1.51		
B 912	Red clover,	96.87	2.66	0.47		
B 913	Red clover,	99.62	0.04	0.34		
B 914	Red clover,	97.54	1.90	0.56		
B 915	Red clover,	99.13	0.55	0.32		
B 916	Red clover,	98.13	1.64	0.23		
B 917	Red clover,	97.29	1.98	0.73		
B 922	Red clover,	96.77	1.60	1.63		
B 923	Red clover,	97.34	1.30	1.36		
B 924	Red clover,	89.54	9.06	1.40	1–1800	
B 926	Red clover,	99.87	0.03	0.10		
B 927	Red clover,	97.82	0.42	1.76		
B 928	Red clover,	96.59	2.54	0.87		
B 929	Red clover,	99.37	0.60	0.03		
B 930	Red clover,	99.93	0.06	0.01		
B 931	Red clover,	98.64	0.92	0.44		
B 938	Red clover,	99.52	0.28	0.20		
B 939	Red clover,	98.74	0.73	0.53		
B 940	Red clover,	98.05	1.89	0.06		
B 941	Red clover,	96.35	2.93	0.72		
B 942	Red clover,	99.90	0.00	0.10		
B 943	Red colver,	98.44	1.29	0.27		
B 944	Red clover,	97.87	1.33	0.80		
B 945	Red clover,	95.42	2.84	1.74		
B 946	Red clover,	89.74	5.49	4.77		
B 947	Red clover,	99.01	0.85	0.14		
B 949	Red clover,	63.76	34.72	1.52		
B 950	Red clover,	98.89	0.61	0.50		
B 951	Red clover,	93.75	5.50	0.75		
B 952	Red clover,	91.79	7.29	1.01		
B 955	Red clover,	89.46	8.90	1.64		
B 957	Red clover,	98.93	0.73	0.34		
B 958	Red clover,	99.62	0.29	0.09		
B 959	Red clover,	99.44	0.18	0.38		
B 960	Red clover,	98.98	0.70	0.32		
B 963	Red clover,	99.41	0.45	0.14		
B 964	Red clover,	99.06	0.71	0.23		
B 965	Red clover,	97.74	0.32	1.94		
B 966	Red clover,	97.33	1.60	1.07		
B 967	Red clover,	99.78	0.00	0.22		

TABLE I.—RESULTS OF TESTS ON SPECIAL SAMPLES—Continued.

Analyst's number.	Name of Seed.	Pure seed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
		Per ct.	Per ct.	Per ct.	Approx.	Approx.
B 969	Red clover,	97.18	1.99	0.83		
B 970	Red clover,	99.25	0.56	0.19		
B 998	Red clover,	98 03	1.89	0.08		
B1004	Red clover,	99.20	0.28	0.52		
B1005	Red clover,	99.72	0.12	0.16		
	Average,	97.70	1.62	0.68		
B 797	Alfalfa,	99.96	0.03	0.01		
B 835	Alfalfa,	99.79	0.06	0.15	1-31346	1-31346
B 841	Alfalfa,	99.97	0.03	0.00		
B 871	Alfalfa,	99.91	0.02	0.07		
B 896	Alfalfa,	99.62	0.13	0.25		
B 918	Alfalfa,	99.21	0.66	0.13		
B 925	Alfalfa,	99.43	0.36	0.21		
B 936	Alfalfa,	99.94	0.06	0.00		
B 953	Alfalfa,	99.82	0.18	0.00		
B 956	Alfalfa,	99.44	0.17	0.39		
B 968	Alfalfa,	99.93	0.07	0.00		
	Average,	99.73	0.16	0.11		
B 803	Timothy grass,	97.12	2.45	0.43		
B 824	Timothy grass,	99.58	0.21	0.21		
B 837	Timothy grass,	99.79	0.12	0.09		
B 850	Timothy grass,	99.64	0.24	0.12		
B 851	Timothy grass,	99.46	0.39	0.15		
B 864	Timothy grass,	99.10	0.48	0.42		1-16539
B 867	Timothy grass,	99.69	0.21	0.10		
B 868	Timothy grass,	99.72	0.15	0.13		
B 907	Timothy grass,	99.73	0.07	0.20		
B 919	Timothy grass,	98.90	0.53	0.57		
B 934	Timothy grass,	99.01	0.83	0.16		
B 948	Timothy grass,	97.87	0.88	1.25		
B 954	Timothy grass,	93.89	5.63	0.48		
B 961	Timothy grass,	97.73	2.04	0.23		
B 962	Timothy grass,	99.37	0.34	0.29		
B 971	Timothy grass,	99.59	0.24	0.17		
B 972	Timothy grass,	94.91	4.62	0.47		
B 973	Timothy grass,	99.19	0.43	0.38		
B 974	Timothy grass,	98.80	0.49	0.71		
B 975	Timothy grass,	98.83	0.48	0.69		
B 976	Timothy grass,	99.95	0.02	0.03		
B 977	Timothy grass,	96.17	1.67	2.16		
B 978	Timothy grass,	99.75	0.04	0.21		
B 979	Timothy grass,	98.73	0.79	0.48		
B 980	Timothy grass,	99.79	0.15	0.06		
B 981	Timothy grass,	99.86	0.07	0.07		
B 982	Timothy grass,	99.83	0.02	0.15		
B 983	Timothy grass,	99.77	0.16	0.07		
B 984	Timothy grass,	99.87	0.05	0.08		
B 985	Timothy grass,	99.83	0.09	0.08		
B 986	Timothy grass,	99.10	0.00	0.90		
B 987	Timothy grass,	99.94	0.06	0.00		
B 988	Timothy grass,	99.93	0.03	0.04		
B 989	Timothy grass,	99.15	0.20	0.65		
B 990	Timothy grass,	99.37	0.26	0.37		
B 991	Timothy grass,	99.88	0.07	0.05		
B 992	Timothy grass,	99.45	0.43	0.12		
B 993	Timothy grass,	97.32	2.56	0.12		
B 994	Timothy grass,	99.20	0.54	0.26		
B 995	Timothy grass,	98.85	0.93	0.22		
B 996	Timothy grass,	97.73	1.76	0.51		
B 997	Timothy grass,	96.63	2.80	0.57		
B1000	Timothy grass,	99.93	0.07	0.00		
B1001	Timothy grass,	99.82	0.09	0.09		
B1002	Timothy grass,	97.00	2.35	0.65		
B1003	Timothy grass,	99.54	0.39	0.07		
	Average,	98.88	0.79	0.33		

TABLE I.—RESULTS OF TESTS ON SPECIAL SAMPLES—Concluded.

Analyst's number.	Name of Seed.	Pure seed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
		Per ct.	Per ct.	Per ct.	Approx.	Approx.
B 937	Oats,	99.94	0.00	0.06		
B 829	Alsike clover,	99.35	0.31	0.34		
B 830	Alsike clover,	98.14	1.61	0.25		
B 839	Alsike clover,	99.54	0.46	0.00		
B 855	Alsike clover,	98.89	0.38	0.73		
B 932	Alsike clover,	97.29	2.48	0.23		
	Average,	98.64	1.05	0.31		
B 999	Perennial rye grass,	99.70	0.30	0.00		
B 800	White clover,	99.08	0.51	0.41		
B 810	White clover,	80.09	18.96	0.95		1-16593
B 836	White clover,	96.29	3.08	0.63		
B 840	White clover,	99.06	0.47	0.47		
B 872	White clover,	95.06	4.49	0.45	1-20132	
B 873	White clover,	98.40	1.44	0.16		
B 921	White clover,	97.13	2.04	0.83		
	Average,	95.02	4.42	0.56		
B 875	Red top grass,	93.78	0.80	5.42		
B 920	Canadian blue grass,	82.61	4.00	13.39		1-5122
B 935	Orchard grass,	81.51	0.44	18.05		
B 874	Kentucky blue grass,	80.10	1.02	18.88		
B 933	Sweet clover,	83.05	16.94	0.01		
B 876	Vetch,	99.95	0.00	0.05		

AVERAGE PURITY OF OFFICIAL SAMPLES

The following Table (No. II), shows the average purity of each of the fifteen classes or kinds of official samples of seeds examined during the year. In those kinds where many samples are included, the results will more nearly represent the average quality of seeds sold in the State than would be the case where only a few samples are included. It will be noted that the average purity of each kind of seed exceeded the standards required, except in three cases where only one and two samples were examined and averaged.

TABLE II.—AVERAGE PURITY OF OFFICIAL SAMPLES.

Name of Seed.	No. samples.	Standard of purity.	Pure seed.	Foreign seed.	Inert matter.
		Per ct.	Per ct.	Per ct.	Per ct.
Red clover,	100	97	98.65	1.00	0.35
Crimson clover,	3	97	98.85	0.67	0.48
Alfalfa,	25	97	99.63	0.17	0.20
Timothy grass,	47	97	99.32	0.36	0.32
Barley,	1	97	96.71	3.20	0.09
Oats,	5	97	98.69	1.07	0.24
Alsike clover,	56	95	96.67	2.89	0.44
Perennial rye grass,	2	95	93.00	5.82	1.18
German millet,	8	95	98.99	0.89	0.12
Common millet,	5	----------	99.04	0.80	0.16
White clover,	6	90	90.89	8.26	0.85
Red top grass,	7	85	85.50	2.16	12.34
Canadian blue grass,	1	75	91.76	1.15	7.09
Orchard grass,	2	75	59.63	0.71	39.66
Kentucky blue grass,	8	75	79.32	0.47	20.21
Total,	276	----------	----------	----------	----------

RESULTS OF INSPECTION

The official samples of seed secured by the sampling agents numbered 276, representing fifteen different kinds. Each sample was tested for the percentages of "Pure Seed," "Foreign Seed" and "Inert Matter," and examined for the presence of dodder and Canada thistle. That portion of the sample considered as "Pure Seed," includes only those indicated by the name or kind under which they were sold. "Foreign Seed," includes all other seeds present in the sample differing from those which the sample purports to represent. The "Inert Matter," includes the dirt, stones, broken stems and less than halves of the seed examined or of the foreign seeds. Of the total number tested, twenty-one failed to meet the required standards.

Nearly one-half or 100 of the samples received were red clover. Only 6 of this number were found to test less than the standard of 97 per cent. There were 32 samples representing seed which was guaranteed in excess of 97 per cent. pure, and of this number 20 failed to meet these higher guarantees and 2 of the samples guaranteed in this manner, tested slightly less than required. The lowest percentage was 93.02 per cent., the highest, 99.88 per cent., averaging, 98.65 per cent. Dodder was found present in 1 sample to the extent of approximately 1 seed in 65,000 and Canada thistle was present in another sample in the proportion of 1 to 15,000.

Crimson clover was represented by 3 samples, testing from 98.59 per cent. to 99.09 per cent., averaging 98,85 per cent., exceeding the standard.

The number of samples of alfalfa received, was 25, all of which exceeded 97 per cent., varying from 98.33 per cent. to 99.98 per cent., averaging 99.63 per cent. Six of these samples represented alfalfa guaranteed 99 or more per cent. pure, and 2 of these guaranteed samples tested slightly less than claimed. Dodder was found present in 1 sample in the proportion of 1 seed in 20,000.

Timothy grass was represented by 47 samples, all of which, upon being tested for purity were found to exceed the requirements, testing from 97.45 per cent. to 99.98 per cent., and averaging 99.32 per cent. Thirteen of the samples were guaranteed to test from 98.50 per cent. to 99.50 per cent., exceeding the standard of 97 per cent. and of this number, 4 tested less than these higher guarantees. None of the samples were found to contain dodder or Canada thistle.

The 1 sample of barley examined tested 96.71 per cent., slightly under the standard and the 5 samples of oats received, tested from 97.05 per cent. to 99.90 per cent., averaging 98.69 per cent. Two of these latter samples were guaranteed in excess of the standard and the tests more than met these figures.

There were 56 samples of alsike clover received and examined, testing from 92.10 per cent. to 99.99 per cent., averaging 96.67 per cent., exceeding the standard of 95 per cent. Six of the samples were found to test less than required and 14 samples represented seed guaranteed higher than required of from 97.50 per cent. to 99.50 per cent. Of those guaranteed in this manner, 11 were found to test less than claimed, one of these being under 95 per cent. None of the samples of alsike clover were found to contain dodder, but 17 samples were found to contain Canada thistle in the proportion of from approximately 1 seed in 1,850 to 1 in over a million, thus showing that this weed seed was present more frequently in alsike clover than in any of the other kinds of seeds examined.

Of the seed of perennial rye grass, only 2 were received which averaged 93 per cent., being less than the standard of 95 per cent.

The German millet seed included 8 samples, all of which exceeded the standard testing from 95.86 per cent. to 99.90 per cent., averaging 98.99 per cent. Two of these were guaranteed 98.50 per cent. and 99.00 per cent., 1 falling under the higher guarantee.

Five samples of common millet, which is not included in the Seed Law, were received and examined, testing from 97.37 per cent. to 99.98 per cent., averaging 99.04 per cent.

The 6 samples of white clover received tested from 77.77 per cent. to 97.48 per cent., averaging 90.89 per cent. and 2 of these were found to test less than the standard of 90 per cent.

The 7 samples of red top grass having a required standard of 85 per cent., were found to test from 53.11 per cent, to 94.12 per cent., averaging 85.50 per cent. One sample, as will be noted, tested considerably less than required, this deficiency being caused largely by the presence of 45 per cent. of inert matter.

Canadian blue grass, was represented by 1 sample testing 91.76 per cent., exceeding the standard and the 2 samples of orchard grass received, averaging 59.63 per cent. failed to meet the required standard of 75 per cent.

The 8 samples of Kentucky blue grass included in the report showed purity tests of from 74.78 per cent., which was less than the standerd of 75 per cent., to 85.13 per cent., averaging 79.32 per cent. One lot of this kind of seed was guaranteed to be 85 per cent. pure which, while passing the standard, failed to meet this guarantee.

Table III, which follows, includes the detailed results of the purity tests on each of the official samples of seed received during the year, together with the averages of each kind or class, the names of the seed and the names and addresses of the seedsmen, growers and dealers from whom the samples were secured.

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
	RED CLOVER.		Per ct.	Per ct.	Per ct.	Per ct.	Approx	Approx
	THE ATLANTIC SEED CO., PHILADELPHIA, PA.							
A 902	Alpha Brand Medium,	Frank B. Burkholder, Lititz,	99.82	99.74	0.18	0.00		
A 801	Alpha Brand Medium,	J. H. Cole, Danville,	99.79		0.13	0.08		
A 867	Insurance Brand Medium,	S. Book & Bro., Quarryville,	99.22	99.50	0.67	0.11		
A 802	Medium,	J. H. Cole, Danville,	97.60		2.00	0.40	1-65000	
	BLAMBERG BROTHERS, INC., BALTIMORE, MD.							
A 767	Mediu,m	Muth Brothers, Elizahethtown,	99.51	99.60	0.22	0.27		
A 831	Purseed Brand Medium,	F. Loucks & Son, York,	99.75	99.60	0.18	0.07		
	JOHN J. BUFFINGTON & CO., BALTIMORE, MD.							
A 833	Buff Brand Medium,	F. Loucks & Son, York,	99.18		0.31	0.51		
A 993	Red Clover,	W. S. Stuart, Carlisle,	99.06		0.60	0.34		
	CHURCHILL GRAIN & SEED CO., TOLEDO, OHIO.							
A 794	Lion Brand Mammoth,	H. J. Klinger & Co., Butler,	98.75		0.96	0.29		
A 795	Lion Brand Medium,	H. J. Klinger & Co., Butler,	99.03		0.61	0.36		
A1020	Prime Contract Brand Medium,	Van Buskirk & Brother, Pottstown,	99.46		0.47	0.07		
	E. W. CONKLIN & SON, INC., BINGHAMTON, N. Y.							
A 945	Atlas Brand Mammoth,	Weeks Hardware Co., Scranton,	97.30		1.75	0.95		
A 946	Atlas Brand Medium,	Weeks Hardware Co., Scranton,	97.37		1,45	1.18		
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A 805	Ace Brand Mammoth,	Blank & Gottshall, Sunbury,	98.45		1.05	0.50		
A 804	Ace brand Mammoth,	J. H. Cole, Danville,	99.20		0.58	0.22		
A 972	Ace Brand Mammoth,	A. J. Roat Supply Co., Kingston,	97.32		2.19	0.49		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917—Continued.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed. Found.	Pure Seed. Guaranteed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.—Continued.		Per ct.	Per ct.	Per ct.	Per ct.	Approx	Approx
A 807	Ace Brand Medium,	Blank & Gottshall, Sunbury,	97.40		2.00	0.60		
A 973	Ace Brand Medium,	A. J. Roat Supply Co., Kingston,	98.11		1.30	0.59		
A 884	Pine Tree,	K. L. McClain & Co., Tyrone,	99.20		0.41	0.39		
	CUMBERLAND SEED CO., CUMBERLAND, MD.							
A 872	Extra Fancy,	H. L. Stultz & Brother, Altoona,	99.20	99.50	0.51	0.29		
	L. K. DALE, OAK HALL STATION, PA.							
A 983	Red Clover,	J. G. Dubs, Bellefonte,	99.06	99.07	0.50	0.44		
	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A 815	Ace Brand,	McFarland Supply Co., Greensburg,	98.48		1.10	0.42		
A 918	Ace Brand Mammoth,	Swope Brothers, Johnstown,	98.05		1.05	0.90		
A 893	Ace Brand Medium,	H. C. Beerits' Sons, Somerset,	97.32		1.73	0.95		
A 919	Ace Brand Medium,	Swope Brothers, Johnstown,	98.70		1.17	0.13		
A 895	Globe Brand,	H. C. Beerits' Sons, Somerset,	99.32		0.40	0.28		
A 791	Globe Brand Mammoth,	Thompson & Glenn, Butler,	99.68		0.31	0.01		
A 790	Globe Brand Medium,	Thompson & Glenn, Butler,	99.53		0.29	0.18		
A 926	Medium,	G. Bostert & Sons, Johnstown,	98.96		0.78	0.26		
A 924	Pine Tree Brand,	John Thomas & Sons, Johnstown,	99.11		0.76	0.13		
A 774	Pine Tree Brand Mammoth,	A. F. Grine, Beaver,	98.68		0.99	0.33		
A 827	Pine Tree Brand Medium,	H. Altman & Son, Irwin,	99.64		0.19	0.17		
A 773	Pine Tree Brand Medium,	A. F. Grine, Beaver,	98.29		1.32	0.39		
	H. W. DOUGHTEN, MOORESTOWN, N. J.							
A 843	Medium,	Strayer Brothers, York,	98.79	99.54	1.14	0.07		
A 910	Medium,	Joseph C. Walker & Sons Co., Gap,	98.70	99.00	1.23	0.07		
A 939	Red Clover,	E. E. Wentz, Lock Haven,	99.36	99.50	0.43	0.21		

	O. GANDY & CO., SOUTH WHITELY, IND.							
A 769	Extra Fancy Lot 10 Brand Medium,	Dodds & Garrett, Beaver Falls,	99.38	99.50	0.43	0.19		
A 788	No. 12 Standard A Brand Mammoth,	Charles H. Miller & Co., Butler,	99.62	99.00	0.30	0.08		
A 786	No. 12 Standard A Brand Medium,	Charles H. Miller & Co., Butler,	98.47	99.00	1.23	0.30		
A1007	Standard A Brand Medium,	Canonsburg Milling Co., Canonsburg,	99.08	99.00	0.62	0.30		
	HARVEY SEED CO., BUFFALO, N. Y.							
A 857	Medium,	Hoke Smith, Hanover,	98.39		1.42	0.19		
A 988	Red Clover,	M. C. Dietz & Son, Mechanicsburg,	98.39		1.38	0.23		
A 989	Red Clover,	A. B. Harnish, Mechanicsburg,	98.33		1.35	0.32		
	HERR & COMPANY, LANCASTER, PA.							
A 865	Medium,	A. L. Herr & Bro., Quarryville,	98.40		0.80	0.80		
	A. H. HOFFMAN, INC., LANDISVILLE, PA.							
A 847	Medium,	Menges Bros. & Stauffer, Spring Grove,	99.43		0.22	0.35		
	J. CHARLES McCULLOUGH, CINCINNATI, OHIO.							
A1004	Red Clover,	Acme Milling Co., Corry,	99.24		0.40	0.36		
	MILWAUKEE SEED CO., MILWAUKEE, WIS.							
A 842	Medium Red,	H. H. Smyser, York,	98.93	99.50	1.66	0.31		
	JOHN MYERS, CARLISLE, PA.							
A 992	Red Clover,	W. S. Stuart, Carlisle,	95.50		3.38	1.12		
	THE PHILADELPHIA SEED CO., INC., PHILADELPHIA, PA:							
A 781	Mammoth,	Obold Hardware Co., Reading,	96.78	99.00	2.24	0.98		
A 778	Medium,	Benjamin Hardware Co., Phoenixville,	99.32		0.35	0.33		
A 780	First Grade Medium,	Obold Hardware Co., Reading,	98.65	99.00	1.01	0.34		
A 784	Second Grade Medium,	Obold Hardware Co., Reading,	94.69	98.00	4.55	0.76		
A1027	Puritan Brand Medium,	A. K. Kulp, Pottstown,	98.19		1.49	0.32		
A 812	Puritan Brand Medium,	E. J. Rup, Sunbury,	97.65		1.66	0.69		
A 877	Quaker Brand,	Grazier Brothers, Tyrone,	99.30		0.59	0.11		
A 900	Quaker Brand Medium,	Elmer Eby, Lititz,	99.34	99.50	0.49	0.17		
A1026	Quaker Brand Medium,	A. K. Kulp, Pottstown,	99.12		0.69	0.19		
A 916	Quaker Brand Medium,	Paradise Farmers Association, Inc., Vintage,	98.86	99.50	0.57	0.57		
A 776	Quaker Brand Medium,	I. J. Tustin, Phoenixville,	99.47		0.24	0.29		
	ROBINSON BROTHERS, TYRONE, PA.							
A 885	Red Clover,	K. L. McClain & Co., Tyrone,	99.09		0.58	0.53		
	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A 943	Red clover,	E. H. Blackburn, Mill Hall,	99.43		0.57	0.00		
A 819	Red clover,	The Philip Doherty Hardware and Supply Co., Latrobe,	98.20		1.52	0.28		
A 996	Red clover,	L. L. Rice, Carlisle,	99.28	99.00	0.55	0.17		
A 938	Mammoth,	E. F. Wentz, Lock Haven,	99.58	99.50	0.33	0.09		
A 930	Oriole Brand,	F. H. Dyer, Lock Haven,	99.55	99.50	0.35	0.10		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917—Continued.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
	WM. G. SCARLETT & CO., BALTIMORE, MD.—Continued.		Per ct.	Per ct.	Per ct.	Per ct.	Approx	Approx
A 962	Oriole Brand Mammoth,	Davies & Fine, Inc., Wilkes-Barre,	99.26	99.50	0.43	0.31		
A 970	Oriole Brand Medium,	Davies & Fine, Inc., Wilkes-Barre,	99.44		0.23	0.33		
A 834	Oriole Brand Medium,	F. Loucks & Son, York,	99.88	99.50	0.09	0.03		
	SCOBIE & PARKER CO., PITTSBURGH, PA.							
A 817	Medium,	F. E. Palnter, Mt. Pleasant,	96.86		2.23	0.91		1-15500
	THE W. A. SIMPSON CO., BALTIMORE, MD.							
A 859	Medium,	N. E. Gobrecht & Bros., Hanover,	99.01	99.50	0.72	0.27		
A 829	Purity Brand Medium,	J. C. Ernst & Co., York,	99.54	99.50	0.33	0.13		
A 868	Red Clover,	Fox & Fox, Altoona,	98.86		0.94	0.20		
A 995	Red Clover,	W. S. Stuart, Carlisle,	99.15		0.57	0.28		
	W. H. SMALL & CO., EVANSVILLE, IND.							
A 889	Mammoth,	John G. Emert, Somerset,	98.45		1.13	0.42		
A 890	Medium,	John G. Emert, Somerset,	99.05		0.57	0.38		
	C. S. SNYDER, SNYDERSVILLE, PA.							
A 763	Mammoth,	William Gates Estate, Kittanning,	94.17		5.18	0.65		
	THE STANFORD SEED CO., INC., BUFFALO, N. Y.							
A 863	Choice Brand Medium,	Quarryville Farmers Association, Quarryville,	98.62	98.70	1.19	0.19		
A 864	Fancy Brand Medium,	Quarryville Farmers Association, Quarryville,	98.21	98.50	1.66	0.13		
A1014	Honor Brand Medium,	Wm. H. Dunlap, Jr., Canonsburg,	99.59		0.20	0.21		
A 848	Honor Brand Medium,	Wm. J. Young & Co., Hanover,	99.59	99.60	0.35	0.06		
A1011	Mammoth,	Wm. H. Dunlap, Jr., Canonsburg,	99.47		0.45	0.08		
A 912	Medium,	C. E. Brackbill, Gap,	99.39	99.00	0.33	0.28		
A 770	Medium,	Excelsior Flour & Feed Co., Freedom,	98.95		0.96	0.09		
A 766	Medium,	J. N. Hershey, Florin,	98.74		0.53	0.73		

A 771	Reliable Brand Mammoth,	Excelsior Flour & Feed Co., Freedom,	99.44		0.36	0.20		
A1010	Reliable Brand Medium,	Canonsburg Milling Co., Canonsburg,	97.64		2.09	0.27		
A1017	Selected Mammoth,	R. J. Toepfer, Tarentum,	99.27		0.30	0.43		
A1018	Selected Medium,	R. J. Toepfer, Tarentum,	99.24		0.52	0.24		
	STEINMAN HARDWARE CO., LANCASTER, PA.							
A 906	Medium,	W. M. Amer, Lititz,	99.65		0.23	0.12		
	THE TOLEDO FIELD SEED CO., TOLEDO, OHIO.							
A1015	Medium,	Allen Kirkpatrick & Co., Pittsburgh,	97.96		1.61	0.43		
	UNION PRODUCE CO., UNION CITY, PA.							
A 999	Ace Brand Medium,	Brooklyn Milling Co., Spartansburg,	98.16		1.38	0.46		
A1002	Mammoth,	Brooklyn Milling Co., Spartansburg,	98.94		0.66	0.40		
	N. WERTHEIMER & SONS, LIGONIER, IND.							
A 897	Fid. Medium,	H. C. Beerits' Sons, Somerset,	93.02		6.18	0.80		
A 896	Rel. Medium,	H. C. Beerits' Sons, Somerset,	97.71		2.13	0.16		
	REUBEN WETZEL, SOLOMA, PA.							
A 937	Red Clover,	E. E. Wentz, Lock Haven,	97.90	98.40	0.56	1.54		
	WHITNEY-ECKSTINE SEED CO., BUFFALO, N. Y.							
A 881	Eureka,	H. L. Orr, Tyrone,	99.01		0.73	0.26		
A 752	Red Clover,	Holmes Seed Co., Harrisburg,	98.71		1.02	0.27		
	J. F. ZAHN & CO., TOLEDO, OHIO.							
A 800	Prime Medium,	W. W. Welliver, Danville,	99.77		0.13	0.10		
	UNKNOWN.							
A 839	Medium,	H. H. Smyser, York,	97.65	98.50	1.75	0.60		
A 940	Red Clover,	A. A. Schenk, Howard,	99.42		0.15	0.43		
		Average,	98.65		1.00	0.35		
	CRIMSON CLOVER.							
	WM. G. SCOTT & CO., BALTIMORE, MD.							
A 955	Crimson Clover,	B. E. & J. T. Cokely, Scranton,	98.93		0.52	0.53		
	THE W. A. SIMPSON CO., BALTIMORE, MD.							
A 871	Crimson Clover,	Fox & Fox, Altoona,	98.50		1.08	0.42		
	UNKNOWN.							
A 969	Crimson Clover,	Davies & Fine, Inc., Wilkes-Barre,	99.09		0.43	0.48		
		Average,	98.85		0.67	0.48		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917—Continued.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
	ALFALFA		Per ct.	Per ct.	Per ct.	Per ct.	Approx	Approx
	BLAMBERG BROTHERS, INC., BALTIMORE, MD.							
A 994	Alfalfa,	W. S. Stuart, Carlisle,	99.98		0.00	0.02		
	JOHN J. BUFFINGTON & CO., BALTIMORE, MD.							
A 850	Buff Brand,	Wm. J. Young & Co., Hanover,	99.95	99.50	0.01	0.04		
	E. W. CONKLIN & SON, INC., BINGHAMTON, N. Y.							
A 954	Alfalfa,	B. E. & J. T. Cokely, Scranton,	99.82		0.10	0.08		
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A 875	Globe Brand,	Grazier Brothers, Tyrone,	99.65		0.26	0.09		
A 809	Pine Tree Brand,	Blank & Gottshall, Sunbury,	99.98		0.01	0.01		
A 977	Pine Tree Brand,	A. J. Roat Supply Co., Kingston,	99.63	99.50	0.12	0.25		
	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A 813	Ace Brand,	McFarland Supply Co., Greensburg,	99.90		0.03	0.07	1–20000	
A 920	Pine Tree Alfalfa,	Swope Brothers, Johnstown,	99.86		0.07	0.07		
	HARVEY SEED CO., BUFFALO, N. Y.							
A 990	Alfalfa,	A. B. Harnish, Mechanicsburg,	99.40		0.13	0.47		
	THE PHILADELPHIA SEED CO., INC., PHILADELPHIA, PA.							
A 782	Puritan Brand,	Obold Hardware Co., Reading,	99.55	99.00	0.29	0.16		
A 899	Quaker Brand,	Elmer Eby, Lititz,	99.62	99.80	0.12	0.26		
A1024	Quaker Brand,	A. K. Kulp, Pottstown,	99.66		0.01	0.33		
A 914	Quaker Brand,	Paradise Farmers Assoc., Inc., Vintage,	99.80	99.50	0.09	0.11		

	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A 821	Alfalfa,	The Philip Doherty Hardware and Supply Co., Latrobe.	98.33		0.93	0.74		
A 836	Oriole Brand,	F. Loucks & Son, York,	99.86		0.03	0.11		
	THE W. A. SIMPSON CO., BALTIMORE, MD.							
A 981	Alfalfa,	J. G. Dubbs, Bellefonte,	99.23	99.94	0.03	0.74		
A 870	Alfalfa,	Fox & Fox, Altoona,	99.88		0.04	0.13		
	W. H. SMALL & CO., EVANSVILLE, IND.							
A 887	Alfalfa,	John G. Emert, Somerset,	99.37		0.45	0.18		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A 765	Fancy,	J. N. Hershey, Florin,	99.81		0.11	0.08		
A1008	Honor Brand,	Canonsburg Milling Co., Canonsburg,	99.56		0.09	0.35		
A 964	Honor Brand,	Davies & Fine, Inc., Wilkes-Barre,	99.42		0.32	0.26		
A 986	Honor Brand,	J. W. Miller, Mechanicsburg,	99.65		0.12	0.23		
A 861	Honor Brand,	Quarryville Farmers Association, Quarryville,	99.74		0.12	0.14		
	STEINMAN HARDWARE CO., LANCASTER, PA.							
A 907	Alfalfa,	W. M. Amer, Lititz,	99.87		0.01	0.12		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 751	Alfalfa,	Holmes Seed Co., Harrisburg,	99.19		0.75	0.06		
		Average,	99.63		0.17	0.20		
	TIMOTHY GRASS.							
	THE ATLANTIC SEED CO., PHILADELPHIA, PA.							
A 964	Insurance A. Brand,	Frank B. Burkholder, Lititz,	98.81	99.70	0.76	0.43		
	BLAMBERG BROTHERS, INC., BALTIMORE, MD.							
A 835	Purseed Brand,	F. Loucks & Son, York,	99.71	99.60	0.20	0.09		
	JOHN BUFFINGTON & CO., HANOVER, PA.							
A 851	Buff Brand,	William J. Young & Co., Hanover,	99.57	99.50	0.21	0.22		
	E. W. CONKLIN & SON, INC., BINGHAMTON, N. Y.							
A 947	Arrow Brand,	Weeks Hardware Co., Scranton,	98.99		0.70	0.31		
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A 979	Ace Brand,	A. J. Roat Supply Co., Kingston,	98.89		0.90	0.21		
A 935	Hatchet,	E. E. Wentz, Lock Haven,	99.11		0.60	0.29		
A 808	Pine Tree Brand,	Blank & Gottshall, Sunbury,	99.92		0.01	0.07		
A 909	Pine Tree Brand,	W. B. Gochnauer, Lititz,	99.67		0.23	0.10		
A 882	Pine Tree Brand,	K. L. McClain & Co., Tyrone,	99.98		0.01	0.01		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917—Continued.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed. Found.	Pure Seed. Guaranteed.	Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Per ct	Per ct.	Per ct.	Per ct.	Approx	Approx
	CUMBERLAND SEED CO., CUMBERLAND, MD.							
A 873	Superior Quality,	H. L. Stultz & Bro., Altoona,	99.74	99.80	0.06	0.20	-------	-------
	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A 762	Colonial Brand,	J. A. Gault & Co., Kittanning,	99.04	-------	0.52	0.44	-------	-------
A 808	Fancy No. 1 Recleaned,	H. C. Beerits' Sons, Somerset,	99.59	-------	0.15	0.26	-------	-------
A 891	No. 1 Recleaned,	H. C. Beerits' Sons, Somerset,	97.98	-------	1.04	0.98	-------	-------
A 892	Pine Tree Brand,	H. C. Beerits' Sons, Somerset,	99.80	-------	0.02	0.18	-------	-------
A 761	Pine Tree Brand,	J. A. Gault & Co., Kittanning,	99.82	-------	0.11	0.07	-------	-------
A 775	Pine Tree Brand,	A. F. Grine, Beaver,	99.92	-------	0.04	0.04	-------	-------
A 793	Pine Tree Brand,	H. J. Klingler & Co., Butler,	99.45	-------	0.18	0.37	-------	-------
A 922	Pine Tree Brand,	Swope Brothers, Johnstown,	99.81	-------	0.12	0.07	-------	-------
A 789	Pine Tree Brand,	Thompson & Glenn, Butler,	99.71	-------	0.11	0.18	-------	-------
A1022	Pine Tree Brand,	Van Buskirk & Brother, Pottstown.	99.74	-------	0.01	0.25	-------	-------
A 927	Timothy Grass,	G. Bostert & Sons, Johnstown,	99.62	-------	0.27	0.11	-------	-------
	O. GANDY & CO., SOUTH WHITLEY, IND.							
A 818	Special "G" Brand,	F. E. Painter, Mt. Pleasant,	97.63	98.50	2.09	0.28	-------	-------
A1006	Standard "A" Brand,	Canonsburg Milling Co., Canonsburg,	98.99	-------	0.42	0.59	-------	-------
A 787	Standard "A" Brand,	C. H. Miller & Co., Butler,	99.41	99.00	0.28	0.31	-------	-------
	HARVEY SEED CO., BUFFALO, N. Y.							
A 855	Timothy Grass,	Hoke Smith, Hanover,	99.47	-------	0.13	0.40	-------	-------
	PALMER & MILLER GRAIN CO., CELINA, OHIO.							
A1003	Timothy Grass,	Davis & Hyde, Spartansburg,	99.20	99.50	0.53	0.27	-------	-------
	THE PHILADELPHIA SEED CO., INC., PHILADELPHIA, PA.							
A 874	Puritan Brand,	Grazier Brothers, Tyrone,	99.18	-------	0.34	0.48	-------	-------
A 879	Puritan Brand,	H. L. Orr, Tyrone,	98.94	-------	0.48	0.58	-------	-------
A 811	Puritan Brand,	E. J. Rupp, Sunbury,	98.88	-------	0.41	0.71	-------	-------
A1023	Quaker Brand,	A. K. Kulp, Pottstown,	99.71	-------	0.11	0.18	-------	-------

	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A 961	Oriole Brand,	Davies & Fine, Inc., Wilkes-Barre,	99.73	99.50	0.10	0.17		
A 931	Oriole Brand,	F. H. Dyer, Lock Haven,	99.71		0.19	0.10		
A 854	Timothy Grass,	C. E. Miller, Hanover,	99.22	99.00	0.52	0.26		
A 844	Timothy Grass,	Strayer Brothers, York,	98.15	96.75	1.46	0.39		
	THE W. A. SIMPSON CO., BALTIMORE, MD.							
A 828	Purity Brand,	J. C. Ernst & Co., York,	99.58	99.50	0.11	0.31		
A 860	Purity Brand,	N. E. Gobrecht & Bro., Hanover,	99.52	99.50	0.31	0.17		
A 980	Timothy Grass,	J. G. Dubbs, Bellefonte,	99.58	99.50	0.21	0.21		
A 869	Timothy Grass,	Fox & Fox, Altoona,	99.63		0.07	0.30		
	W. H. SMALL & CO., EVANSVILLE, IND.							
A 796	Choice,	H. J. Klingler & Co., Butler,	98.82		0.85	0.33		
A 888	Timothy Grass,	John G. Emert, Somerset,	99.25		0.23	0.52		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A 997	Fancy,	Grange Milling Co., Titusville,	99.29		0.47	0.24		
A1013	Liberty Brand,	Wm. H. Dunlap, Jr., Canonsburg,	99.41		0.15	0.44		
A 814	Liberty Brand,	McFarland Supply Co., Greensburg,	99.85		0.02	0.13		
A 984	Liberty Brand,	J. W. Miller, Mechanicsburg,	99.30		0.35	0.35		
A1019	Liberty Brand,	R. J. Toepfer, Tarentum,	99.63		0.16	0.21		
	UNION PRODUCE CO., UNION CITY, PA.							
A1000	Pine Tree Brand,	Brooklyn Milling Co., Spartansburg,	99.72		0.07	0.21		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 822	Herald,	T. F. Wilson, Irwin,	97.45		0.66	1.89		
		Average,	99.32		0.36	0.32		
	BARLEY.							
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 823	Chevalier,	T. F. Wilson, Irwin,	96.71		3.20	0.09		
	OATS.							
	THE CHURCHILL GRAIN & SEED CO., BUFFALO, N. Y.							
A 932	American Wonder Seed,	F. H. Dyer, Lock Haven,	97.05		2.82	0.13		
A 936	Oats,	E. E. Wentz, Lock Haven,	97.17		2.29	0.54		
	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A 966	Oats,	Davies & Fine, Inc., Wilkes-Barre,	99.74	98.83	0.12	0.14		
	UNKNOWN.							
A 759	Alberta,	Holmes Seed Co., Harrisburg,	99.90		0.01	0.09		
A 760	Seed,	J. A. Gault & Co., Kittanning,	99.61	98.00	0.09	0.30		
		Average,	98.69		1.07	0.24		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917—Continued.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
	ALSIKE CLOVER.		Per ct.	Per ct.	Per ct.	Per ct.	Approx	Approx
	THE ATLANTIC SEED CO., PHILADELPHIA, PA.							
A 866	Insurance Brand,	S. Book & Bro., Quarryville,	96.83	99.50	3.00	0.17		1–8000
	BLAMBERG BROTHERS, INC., BALTIMORE, MD.							
A 768	Alsike Clover,	Muth Brothers, Elizabethtown,	98.24	98.00	1.25	0.51		
	JOHN J. BUFFINGTON & CO., BALTIMORE, MD.							
A 845	Alsike Clover,	Strayer Brothers, York,	96.48		3.40	0.12		
A 882	Buff Brand,	F. Loucks & Son, York,	98.57		1.35	0.08		
	CHURCHILL GRAIN & SEED CO., TOLEDO, OHIO.							
A1021	Prime Contract Brand,	Van Buskirk & Brother, Pottstown,	97.53		0.84	1.63		
A 792	Recleaned,	H. J. Klingler & Co., Butler,	97.62		0.89	1.19		
	E. W. CONKLIN & SON, BINGHAMTON, N. Y.							
A 944	C. M. Brand,	Weeks Hardware Co., Scranton,	94.63		4.15	1.22		1–13000
A 798	Paragon Brand,	W. W. Welliver, Danville,	95.79		3.13	1.08		
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A 803	Fancy Pine Tree Brand,	J. H. Cole, Danville,	94.95		4.81	0.24		1–5200
A 886	Globe,	K. L. McClain & Co., Tyrone,	99.99		0.01	0.00		
A 896	Pine Tree Brand,	Blank & Gottshall, Sunbury,	95.00		4.48	0.52		
A 883	Pine Tree Brand,	K. L. McClain & Co., Tyrone,	95.37		4.47	0.16		1–7000
A 878	Pine Tree Brand,	H. L. Orr, Tyrone,	95.04		4.53	0.43		1–13720
A 978	Pine Tree Brand,	A. J. Roat Supply Co., Kingston,	94.89	99.50	5.04	0.16		1–3000
A 799	Pine Tree Brand,	W. W. Welliver, Danville,	96.43		3.31	0.26		1–12000

	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A 894	Ace Brand,	H. C. Beerits' Sons, Somerset,	94.64		5.11	0.25		1-12200
A 921	Ace Brand.	Swope Brothers, Johnstown,	95.45		4.01	0.54		1-28750
A 928	Alsike Clover,	G. Bostert & Sons, Johnstown,	94.82		4.73	0.45		1-22250
A 826	Pine Tree Brand,	H. Altman & Son, Irwin,	95.25		4.27	0.48		1-1850
	H. W. DOUGHTEN, MOORESTOWN, N. J.							
A 911	Alsike Clover,	Jos. C. Walker & Sons Co., Gap,	98.30	98.00	1.43	0.18		
	HARVEY SEED CO., BUFFALO, N. Y.							
A 856	Alsike Clover,	Hoke Smith, Hanover,	98.42		1.43	0.15		
	MILWAUKEE SEED CO., MILWAUKEE, WIS.							
A 840	Alsike Clover,	H. H. Smyser, York,	95.39	98.00	4.24	0.37		
	THE PHILADELPHIA SEED CO., INC., PHILADELPHIA, PA.							
A 779	Alsike Clover,	Benjamin Hardware Co., Phoenixville,	97.25		2.13	0.62		
A 777	Alsike Clover,	I. J. Tustin, Phoenixville,	97.65		2.10	0.25		
A 876	Puritan Brand,	Grazier Brothers, Tyrone,	92.10		7.63	0.27		
A 783	Puritan Brand,	Obold Hardware Co., Reading,	95.43	99.00	4.02	0.55		
A 810	Puritan Brand,	E. J. Rupp, Sunbury,	97.01		2.33	0.66		
A 931	Quaker Brand,	Elmer Eby, Lititz,	97.56	98.00	1.40	1.04		
A1025	Quaker Brand,	A. K. Kulp, Pottstown,	96.89		2.40	0.71		
A 915	Quaker Brand,	Paradise Farmers Association, Inc., Vintage,	97.63	99.50	1.80	0.57		
	WM. G. SCARLETT & CO., BALTIMORE, MD.							
A 942	Alsike Clover,	E. H. Blaekburn, Mill Hall,	98.43		1.45	0.12		
A 820	Alsike Clover,	The Philip Doherty Hardware and Supply Co., Latrobe.	97.78		1.83	0.39		
A 991	Alsike Clover,	A. B. Harnish, Meehaniesburg,	98.65	99.00	1.30	0.05		
A 933	Alsike Clover,	E. E. Wentz, Loek Haven,	98.61	99.00	1.19	0.20		
A 903	Oriole Brand,	Frank B. Burkholder, Lititz.	98.77	99.50	1.03	0.20		
A 929	Oriole Brand,	F. H. Dyer, Loek Haven,	99.17		0.56	0.27		
	THE W. A. SIMPSON CO., BALTIMORE, MD.							
A 982	Alsike Clover,	J. G. Dubbs, Bellefonte.	97.27	99.35	2.25	0.48		1-92000
A 830	Purity Brand,	J. C. Ernst & Co., York,	97.31	97.50	2.41	0.08		
A 849	Purity Brand,	Wm. J. Young & Co., Hanover,	98.78	99.50	1.04	0.18		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A1009	Alsike Clover,	Canonsburg Milling Co., Canonsburg,	95.50		4.31	0.19		1-10500
A1012	Alsike Clover,	Wm. H. Dunlap, Jr., Canonsburg,	95.84		4.02	0.14		
A 764	Alsike Clover,	J. N. Hershey, Florin.	96.78		2.80	0.42		
A 941	Alsike Clover,	A. A. Sehenk, Howard,	97.29		2.29	0.42		
A 965	Arc Brand,	Davies & Fine, Inc., Wilkes-Barre,	96.00		3.39	0.61		1-1116000
A 913	Fancy,	C. E. Brackbill, Gap,	96.79		2.96	0.25		1-36750
A 862	Honor Brand,	Quarryville Farmers Assoeiation, Quarryville.	95.81		3.84	0.35		
A 772	Reliable,	Excelsior Flour & Feed Co., Freedom,	96.86		2.98	0.16		
A 816	Reliable,	McFarland Supply Co., Greensburg,	96.57		2.99	0.44		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917—Continued.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
			Per ct.	Per ct.	Per ct.	Per ct.	Approx	Approx
	STEINMAN HARDWARE CO., LANCASTER, PA.							
A 908	Alsike Clover,	W. M. Amer, Lititz,	97.03		2.69	0.28		
	UNION PRODUCE CO., UNION CITY, PA.							
A1001	Alsike Clover,	Brooklyn Milling Co., Spartansburg,	94.58		3.87	1.55		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 750	Alsike Clover,	Holmes Seed Co., Harrisburg,	96.25		3.51	0.24		1-7120
A1016	Alsike Clover,	Albert Kirpatrick Co., Pittsburgh,	96.53		3.04	0.43		1-31200
A 797	B. Aslike,	H. J. Klingler & Co., Butler,	97.10		2.86	0.04		
A 825	Fancy,	T. F. Wilson, Irwin,	96.15		3.11	0.74		
A 880	Pan-American,	H. L. Orr, Tyrone,	95.16		4.55	0.29		
A 987	Vicar,	J. W. Miller, Mechanicsburg,	97.23		1.75	1.02		
		Average,	96.67		2.89	0.44		
	PERENNIAL RYE GRASS.							
	I. L. RADWANER & CO., NEW YORK, N. Y.							
A 959	Perennial Rye Grass,	B. E. & J. T. Cokely, Scranton,	99.70		8.94	0.36		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 757	Perennial Rye Grass,	Holmes Seed Co., Harrisburg,	95.29		2.70	2.01		
		Average,	93.00		5.82	1.18		
	GERMAN MILLET.							
	THE ATLANTIC SEED CO., PHILADELPHIA, PA.							
A 905	Fancy,	W. M. Amer, Lititz,	99.87		0.12	0.01		
	E. W. CONKLIN & CON, INC., BINGHAMTON, N. Y.							
A 948	Choice Brand,	Weeks Hardware Co., Scranton,	99.28		0.61	0.16		

THE ALBERT DICKINSON CO., CHICAGO, ILL.

	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A 923	German Millet,	John Thomas & Sons, Johnstown,	99.54		0.46	0.00		
	H. W. DOUGHTON, MOORESTOWN, N. J.							
A 735	German Millet,	Obold Hardware Co., Reading,	98.10	99.00	1.88	0.02		
	WM. G. SCARLET & CO., BALTIMORE, MD.							
A 934	Oriole Brand,	E. E. Wentz, Lock Haven,	99.53	98.50	0.19	0.28		
	P. A. & S. SMALL CO., YORK, PA.							
A 837	German Millet,	F. Loucks & Son, York,	99.88		0.05	0.07		
	THE STANFORD SEED CO., BINGHAMTON, N. Y.							
A 963	German Millet,	Davies & Fine, Inc., Wilkes-Barre,	99.90		0.00	0.10		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 824	German Millet,	T. F. Wilson, Irwin,	95.86		3.85	0.29		
		Average,	98.99		0.89	0.12		
	COMMON MILLET.							
	THE ALBERT DICKINSON CO., CHICAGO, ILL.							
A 925	Common Millet,	G. Bostert & Sons, Johnstown,	99.42		0.41	0.17		
	HOME FEED CO., YORK, PA.							
A 846	Common Millet,	Strayer Brothers Co., York,	99.88		0.00	0.12		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A 935	Common Millet,	J. W. Miller, Mechanicsburg,	99.08		0.66	0.26		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 917	Common Millet,	Swope Brothers, Johnstown,	97.37		2.51	0.12		
	UNKNOWN.							
A1005	Common Millet,	Acme Milling Co., Corry,	99.45		0.44	0.11		
		Average,	99.04		0.80	0.16		
	WHITE CLOVER.							
	JOHN J. BUFFINGTON & CO., BALTIMORE, MD.							
A 853	White Clover,	Wm. J. Young & Co., Hanover,	96.76	99.00	2.54	0.70		
	E. W. CONKLIN & SON, INC., BINGHAMTON, N. Y.							
A 953	Choice Brand,	Lansing Hardware Co., Scranton,	96.39		2.68	0.93		
A 949	Choice Brand,	Weeks Hardware Co., Scranton,	97.48		2.12	0.40		
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A 974	Choice,	A. J. Roat Supply Co., Kingston,	96.78		2.46	0.76		

TABLE III.—RESULTS OF TESTS ON SAMPLES COLLECTED IN 1917—Concluded.

Analyst's number.	Name of Seed, and Name and Address of Grower or Seedsman.	Name and Address of Dealer.	Pure Seed.		Foreign seed.	Inert matter.	Seeds of dodder.	Seeds of Canada thistle.
			Found.	Guaranteed.				
			Per ct.	Per ct.	Per ct.	Per ct.	Approx	Approx
	SCHULTZ SEED CO., OLNEY, ILL.							
A 968	White Clover,	Davies & Fine, Inc., Wilkes-Barre,	77.77		22.06	0.17		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 753	White Clover,	Holmes Seed Co., Harrisburg,	82.13		17.70	2.17		
		Average,	90.89		8.26	0.85		
	RED TOP GRASS.							
	E. W. CONKLIN & SON, INC., BINGHAMTON, N. Y.							
A 951	Imperial Brand,	Lansing Hardware Co., Scranton,	89.35		1.05	9.60		
	CRAVER-DICKINSON SEED CO., INC., BUFFALO, N. Y.							
A 976	Ace Brand,	A. J. Roat Supply Co., Kingston,	89.80		0.91	9.29		
	SCHULTZ SEED CO., OLNEY, ILL.							
A 958	Solid Seed,	B. E. & J. T. Cokely, Scranton,	90.90		1.10	8.00		
A 967	Tip Top Fancy,	Davies & Fine, Inc., Wilkes-Barre,	94.12		0.61	5.27		
	THE STANFORD SEED CO., BUFFALO, N. Y.							
A 998	Red Top,	Grange Milling Co., Titusville,	91.28		0.68	8.04		
	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y.							
A 754	Fancy,	Holmes Seed Co., Harrisburg,	89.95		8.88	1.17		
A 756	Unhulled,	Holmes Seed Co., Harrisburg,	53.11		1.89	45.00		
		Average,	85.50		2.16	12.34		

	CANADIAN BLUE GRASS.						
A 755	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y. Canadian Blue Grass,	Holmes Seed Co., Harrisburg,	91.76		1.15	7.09	
	ORCHARD GRASS.						
A 950	E. W. CONKLIN & SON, INC., BINGHAMTON, N. Y. Choice Brand,	Weeks Hardware Co., Scranton,	69.83		1.37	28.80	
A 957	I. L. RADWANER & CO., NEW YORK, N. Y. Orchard Grass,	B. E. & J. T. Cokely, Scranton,	49.42		0.06	50.52	
		Average,	59.63		0.71	39.66	
	KENTUCKY BLUE GRASS.						
A 852	JOHN J. BUFFINGTON & CO., BALTIMORE, MD. Kentucky Blue Grass,	Wm. J. Young & Co., Hanover,	82.02	85.00	0.79	16.19	
A 952	E. W. CONKLIN & SON, INC., BINGHAMTON, N. Y. Imperial Brand,	Lansing Hardware Co., Scranton,	85.13		0.12	14.75	
A 858	HARVEY SEED CO., BUFFALO, N. Y. Kentucky Blue Grass,	Hoke Smith, Hanover,	78.94		0.29	20.77	
A 841	ILLINOIS SEED CO., CHICAGO, ILL. Fancy,	H. H. Smyser, York,	78.24		0.11	21.65	
A 838	THE W. A. SIMPSON CO., BALTIMORE, MD. Kentucky Blue Grass,	F. Loucks & Son, York,	74.78		0.34	24.88	
A 758	WHITNEY-ECKSTEIN SEED CO., BUFFALO, N. Y. Kentucky Blue Grass,	Holmes Seed Co., Harrisburg,	76.58		0.93	22.49	
A 956	WOOD STUFFS CO., LOUISVILLE, KY. Kentucky Blue Grass,	B. E. & J. T. Cokely, Scranton,	75.00		0.70	24.30	
A 971	UNKNOWN. Fancy,	Davies & Fine, Inc., Wilkes-Barre,	82.82		0.51	16.67	
		Average,	79.32		0.47	20.21	